N O T I C E

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USER'S GUIDE

LARGE AREA CROP INVENTORY EXPERIMENT (LACIE)

PHASE III PDP 11/45

AUTOMATIC STATUS AND TRACKING SYSTEM

Job Order 71-695

(TIRF 76-0085)

Prepared By

Lockheed Electronics Company, Inc.

Aerospace Systems Division

Houston, Texas

Contract NAS 9-15200

For

EARTH OBSERVATIONS DIVISION

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National Aeronautics and Space Administration

LYNDON B. JOHNSON SPACE CENTER

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1. INTRODUCTION

This guide outlines the use of the Large Area Crop Inventory Experiment (LACIE) Phase III PDP 11/45 Automatic Status and Tracking System as implemented using the Regional Information Management System (RIMS).

The RIMS is a generalized data management system which operates on a PDP 11/45 computer currently located in Building 17 of the NASA, Lyndon B. Johnson Space Center, Houston, Texas. The Automatic Status and Tracking System was designed as a management tool to trace the flow of LACIE materials from the collection of data stage through the various imagery interpretation/mensuration stages, and finally to the production of valid crop-yield estimates.

The purpose of this guide is to familiarize and assist users of the LACIE Phase III ASATS in utilizing the system as implemented under the PDP 11/45 version of the RIMS. The users addressed herein are those persons responsible for ASATS:

- Standard Updating and Reporting
- Non-standard Batch Operations
- Interactive Terminal Operations

To accomplish these purposes, specific procedures for the physical data preparation, computer processing control sequences, and interactive terminal utilization to produce standard and non-standard reports are set forth.

The following documents provide a more complete understanding of the total system including the generalized RIMS system and its capabilities.

- Large Area Crop Inventory Experiment (LACIE) Phase III Automatic Status and Tracking Specifications, JSC-11401 (Rev. A), LEC-8675 (Rev. A).
- PDP 11/45 LACIE Phase II/III Automatic Status and Tracking System Functional Design Specification, JSC-11835, LEC-9861, November 1976.
- RIMS Users Document, LEC-9301 (REV-A).
- PDP 11/45, RSX-11D Users Guide, Digital Equipment Corp., DEC-11-OXDUA-B-D, 1976.
- PDP 11/45, RSX-11D Utility Programs, Digital Equipment Corp., DEC-11-OXUPA-B-D, 1975.

2. DATA PREPARATION

The LACIE Phase III Automatic Status and Tracking System has been designed to operate primarily in the batch mode. Data from the Data Acquisition, Preprocessing, and Transmission Subsystem (DAPTS), the LACIE Physical Data Library (LPDL), the Classification and Mensuration Subsystem (CAMS), and the Operations Coordination Center (OCC) will be entered on punched cards. The card formats are given in figures 1, 2, and 3.

2.1 DAPTS DATA INPUT

Basic sample segment data will be entered by the Ground Data Systems Division (GDSD) of NASA/JSC, using the DAPTS card deck for the generation of JSC interface tapes (fig. 4). The data are to be entered on card types *, 2, and 3. Both ADD (A) and CHANGE (C) decks will not be entered into the system as they are received from the DAPTS. Since the sample segment is not identified on DAPTS cards A and C, the pertinent information from these cards will be entered into the system on a card coded *, which is also used to input the global designator (G) and the priority group (designated by number) for each sample segment being entered. This activity will also automatically punch basic data into the 4, 5, and 6 cards for the LPDL. (See figure 4).

2.2 LPDL DATA INPUT

All data required by the system regarding daily activity in the LPDL are entered using formatted cards coded B, G, H, 4, 5 and 6 (see fig. 2).

2.3 FLOCON/OCC/ISRRS DATA INPUT

Status data regarding the daily activity will be input to the system by CAMS flow control (FLOCON) personnel on formatted cards coded I, J, K, M, X and 9; OCC personnel on formatted

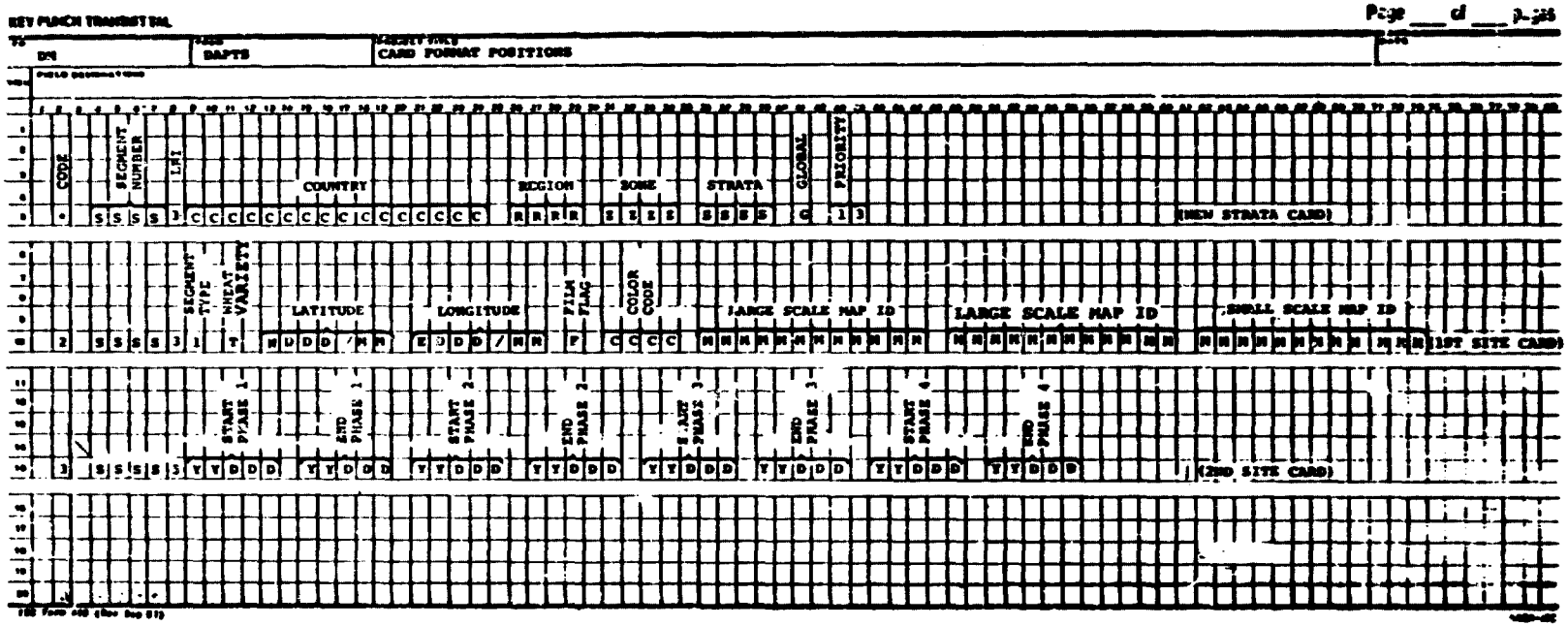

Figure 1.– DAPTS input card formats.

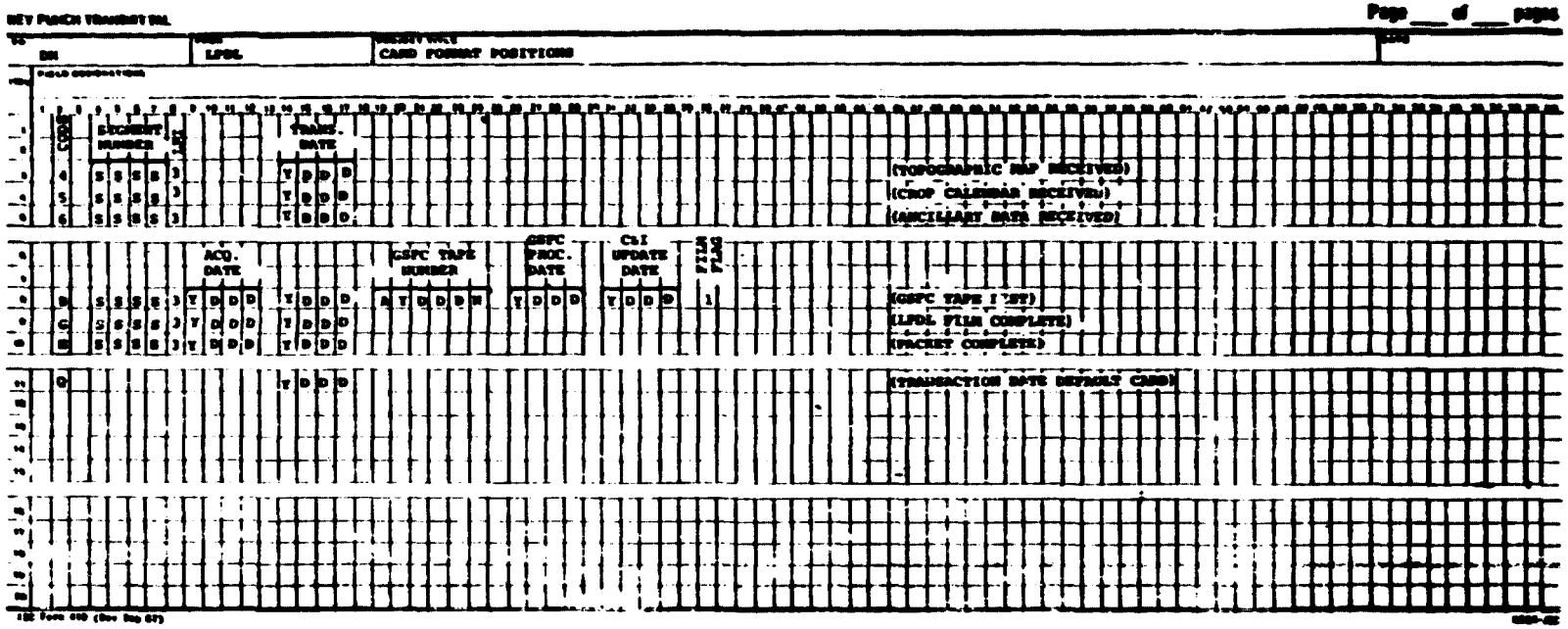

Figure 2.– LPDL input card formats.

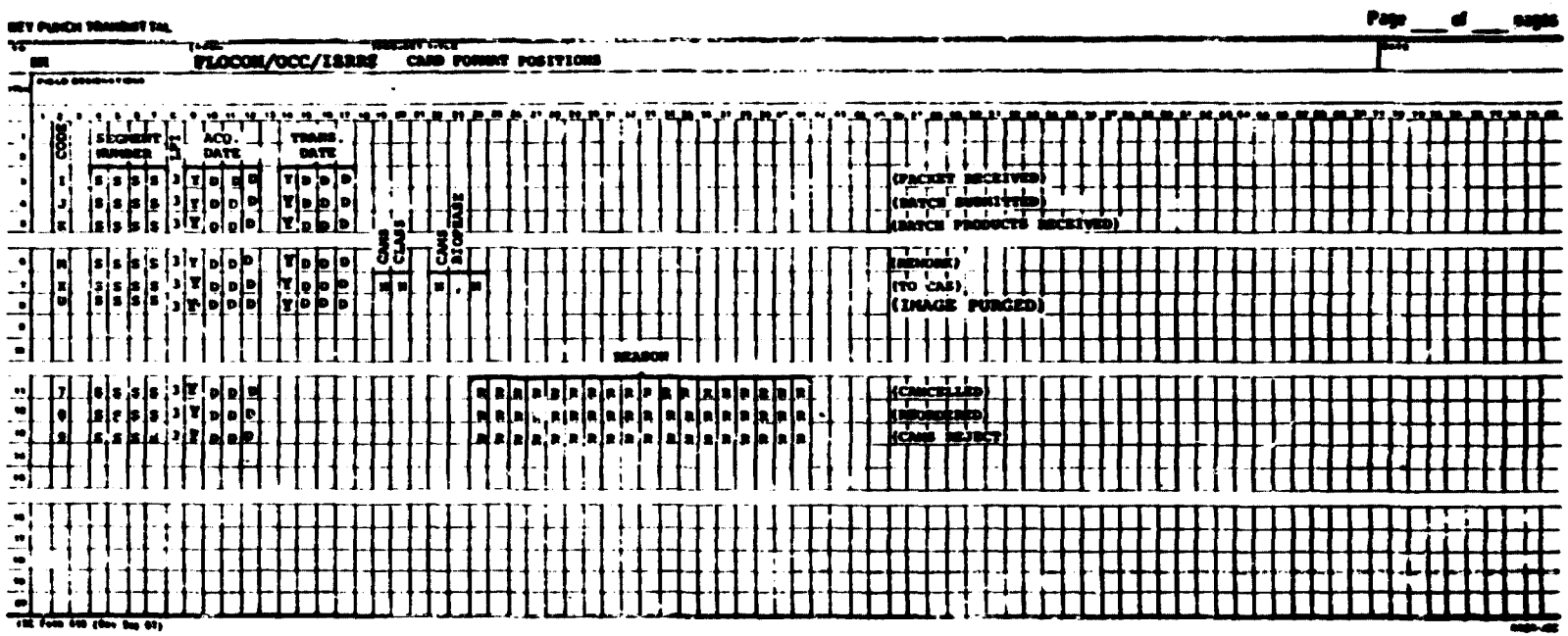

Figure 3.– FLOCON/OCC/ISRRS input card formats.

cards coded 7 and 8; or ISRRS personnel on formatted cards coded U. (See fig. 3).

2.4 UPDATE/MODIFY CARD DECK

The UPDATE/MODIFY card deck consists of all the cards that are submitted by the various LACIE subsystems. UPDATE cards only, MODIFY cards only, or both, may be included in the card deck. No special arrangement of these cards is necessary. Figure 4 illustrates the various ASATS status points.

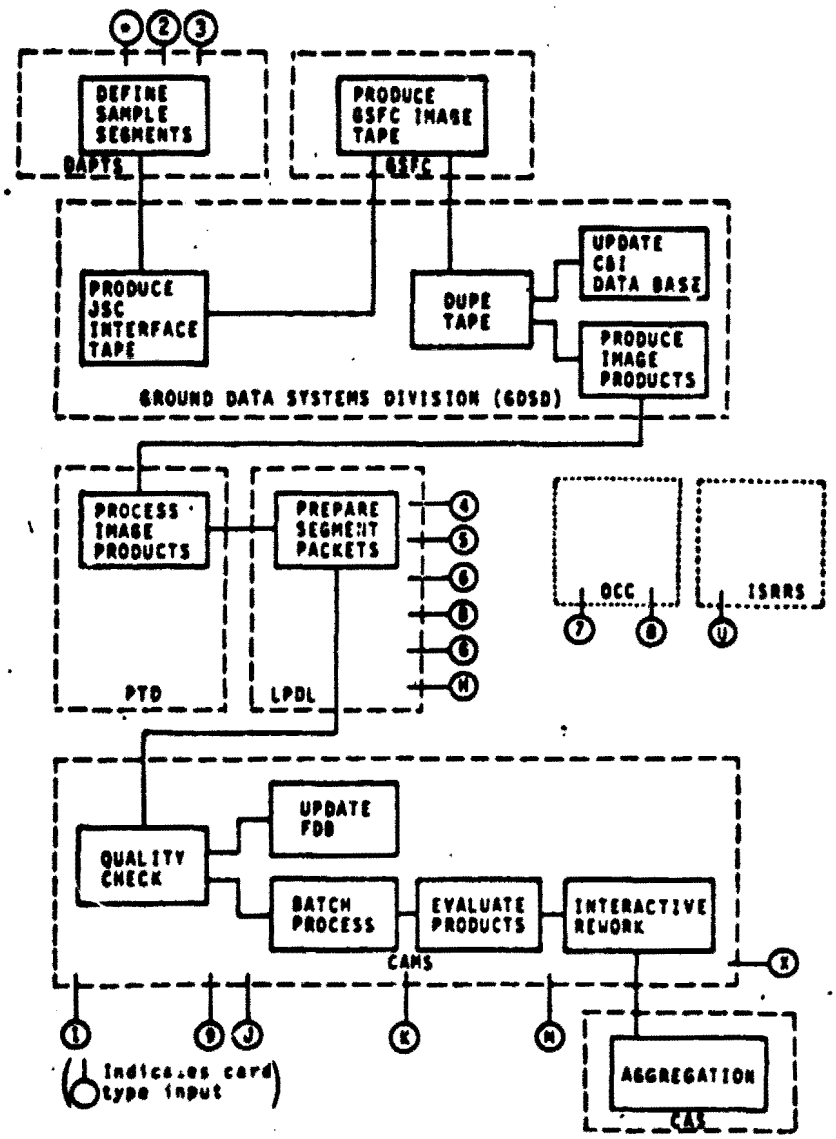

Figure 4.- The LACIE data flow indicating ASATS status points.

3. ASATS OPERATIONS

3.1 GENERAL

The purpose of this section is to summarize information concerning the manner in which the ASATS operates. Greater detail is contained in the LACIE Phase III ASATS Specifications (LEC-8675, Rev. A) and the PDP 11/45 LACIE Phase II/III ASATS Functional Design Specification, LEC-9861.

3.2 STANDARD ASATS OPERATIONS

These operations consist of the Data Base Management procedures which are usually conducted on a daily basis; i.e., standard data base updates and audit reports, standard report generation, data base utility programs, and punched card output. The DBA need only submit the update data cards to the PDP 11/45 computer operator in order to accomplish the standard operations except that a small control deck is also submitted periodically for generation of the Biowindow Opening/Closing Reports, the Operations Summary reports, and the Packet Order list.

3.2.1 STANDARD UPDATES AND AUDIT REPORTS

The data input card formats are shown in figures 1-3 of section 2. Following instructions contained in the system Operator's Manual, the computer operator initiates the running of the standard update and audit report generation. Since all commands to accomplish the job are contained in command files, the operator needs only to oversee such elements as correct mounting of tapes and printer output forms. Examples of the Audit Reports are contained in the LACIE Phase III ASATS Specifications, LEC-8675 (Rev. A) and consist of the following:

- LACIE Batch Input Cards list
- Punch Cards Listing

- **Invalid LACIE Phase Indicator Cards list**
- **Invalid Duplicate Input Cards list**
- **Invalid Input Card Types list**
- **Invalid New Sample Segments Acquisitions Sample Segments Not Defined list**
- **Invalid DAPTS Modify Transactions list**
- **Invalid Acquisition Data Modify Transactions list**
- **Packet Labels**

3.2.2 PUNCHED CARD OUTPUT

As a product of the System Update Program, five card types illustrated in Section 2 of this guide and the LACIE Phase III ASATS Specifications, LEC-8675 (Rev A) are also generated. The card types which are punched consist of the 4, 5, 6, G, and H variety.

3.2.3 STANDARD REPORTS

The standard reports, consisting of the Packet Order List, the Operations Summary of Segments, and the Operations Summary of Acquisitions, may be readily produced following an update run by inserting the appropriate control cards in front of the Batch Stream. (See figure 5.) The cards consist of the following:

- Card-punch Specifier card – tells system that all cards following were punched with IBM 029 codes
- "Date of Reports File" (DORF)
  - Report Date Card – provides date to appear in subsequent reports-format

HD1, 14 February 1977

↑ ↑

cc 1 cc 57-66

- End of File (EOF) Card – multipunched (12, 11, 0, 1, 6, 7, 8, 9) in card column 1

- "Report Specifier File" (RSF)
  - Report Specifier Card (s) – tells system which reports to generate after the standard Update/Report Cycle – format is:

```
REP.COM = filespec 1
REP.COM = filespec 2, etc.
↑
Column 1
```

    wherein filespec would be:

    1. OP 13 – for Operations Summary of Segments (Phase III DAPTS)
    2. OP 23 – for Operations Summary of Acquisitions (Phase III FLOCON)
    3. POLIST – for Packet Order List

- EOF Card – please note that this card is required even if no reports are being requested

- Update Card Deck
  - Update cards may be in any order
  - "Q" card must occur once
  - Deck must have an EOF card at the end

The order in which the batch-stream is set up facilitates appendage of the report specifier command strings to be accomplished automatically after successful completion of the update. Currently, the batch run will handle generation of a maximum of five optional reports in one batch run; e.g., all three of the optional reports listed above plus two user-built reports may be requested.

The filespec for a user-built report is the user supplied name of the RIMS command file which produces the report. This filespec may include device, UIC, file type and/or version when required by RSX-11D system default conventions.

DECK SETUP

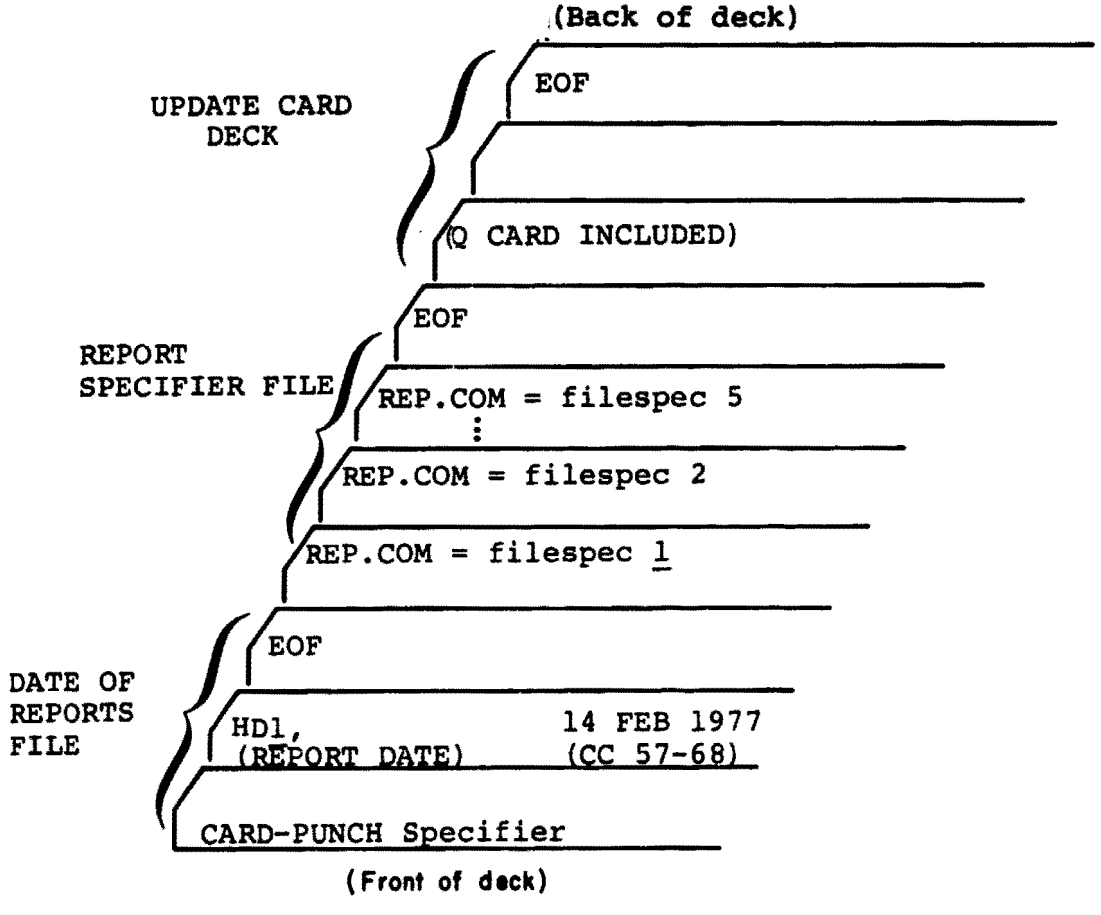

Figure 5.– Batch stream card set-up.

3.2.4 DATA BASE UTILITY PROGRAMS

The data base utility programs are used to ensure the efficient storage and retrieval of data and to provide data base recovery in case of disk failure, etc. These programs are available to the DBA for use at his discretion [see the RIMS User's Manual, (LEC-9301, Rev. A)].

- Data Base Packing – Periodically the data base requires packing in order to minimize disk space allocation and to speed operations. The DBA is responsible for packing the data base regularly (recommended at least once per week).
- Data Base Save – To save the data base periodically on tape in case the data is lost or overlaid on the ASATS disks. This save is part of the daily batch run operations.
- Data Base Recovery – The DBA can effect recovery of the data base by copying a saved data base from tape back to disk and repeating updates made since saving that tape.

3.2.5 ACCESS CONTROL

The Data Base Administrator (DBA) is responsible for assignment of read/write access capability. In order to accomplish access control, the DBA may add (or delete) a security password (and its associated bit mask. For example, if the DBA desires to permit a user read-only access to the data base, the DBA can add a password whose bit mask has all zeroes for the "update" type commands and one's for the "retrieval" and "output" type commands as described in the RIMS User's Document. The user would thus be denied use of any command which would change data in the data base while permitting full usage of all other commands.

3.3 ASATS INTERACTIVE TERMINAL USAGE

The RIMS system provides the user with the commands required to query and display data retrieved from the ASATS Data Base and for the DBA interactively to update specific data fields within selected

logical data records. The RIMS User's Document, LEC-9301 (Rev. A) contains all the commands available and should be used for reference. The following appendices are cited to aid in the use of the interactive terminal and understanding of the Data Base Structure.

- Appendix A – Data Base Structure
- Appendix B – List of Valid RIMS Commands
- Appendix C – Interactive Terminal Log On/Off Procedure
- Appendix D – Interactive Terminal Retrieval/Update Session Example

APPENDIX A

DATA BASE STRUCTURE

DAPTS (PARENT) RECORD FORMAT

Field name	Description	Length (char)	Key
SEG	Segment number	4	
LPI	LACIE phase indicator	1	
COUNTR	Country designator	6	X
REG	Region	2	
ZONE	Zone	4	
STR	Stratum	4	
GD	Global designator	1	
WV	Wheat variety	1	X
PC	Priority code	2	X
TY	Segment type	1	
BIOW1O	Biowindow 1 open (start date)	4	
BIOW1C	Biowindow 1 close (end date)	4	
BIOW2O	Biowindow 2 open	4	
BIOW2C	Biowindow 2 close	4	
BIOW3O	Biowindow 3 open	4	
BIOW3C	Biowindow 3 close	4	
BIOW4O	Biowindow 4 open	4	
BIOW4C	Biowindow 4 close	4	
TOPO	Date topo map received	4	
CROP	Date crop calendar received	4	
ANCIL	Date ancillary data received	4	
SSC	Segment status character	1	
LUP	Time of last update of this record	4	

FLOCON (CHILD) RECORD FORMAT

Field name	Description	Length (char)	Key
SEG	Segment number	4	
LPI	LACIE phase indicator	1	
DATACQ	Acquisition date	4	
BW	Biowindow	1	X
FF	Film Flag	1	
CURS	Current station/status	1	X
CURCOM	Current comment	20	
TAPE	GSFC tape number	6	
GSFC	GSFC processing date	4	
CANI	C&I update date	4	
LPDLCO	Date film products received from LPDL	4	
AICOMP	Date segment ready for CAMS pickup	4	
PACKRE	Date packet received by CAMS	4	
RUNSUB	Date batch data processing request submitted	4	
RUNCT	Run count	1	
PRODRE	Date batch products received by CAMS	4	
REWORK	Date rework begun	4	
RWKCT	Rework count	1	
TOCAS	Date to CAS	4	
CAMSBP	CAMS biowindow	3	
CATG	CAMS evaluation category	2	X
LSD	Time of last change to this record	4	

NOTE: SEGMENT and LPI fields are redundant in various formats; therefore are omitted when appropriate.

Format 19 – DAPTS Internal Storage Description

Length = 22
No. of Field = 23

ID	NAME	ST	LEN	TYP	KEY
1	SEG	9	4	0	0
2	LPI	13	1	0	0
3	COUNTR	14	6	0	1
4	REG	22	2	0	0
5	ZONE	24	4	0	0
6	STR	28	4	0	0
7	GD	32	1	0	0
8	WV	33	1	0	1
9	PC	34	2	0	1
10	TY	36	1	0	0
11	BIOW1O	37	4	0	0
12	BIOW1C	41	4	0	0
13	BIOW2O	45	4	0	0
14	BIOW2C	49	4	0	0
15	BIOW3O	53	4	0	0
16	BIOW3C	57	4	0	0
17	BIOW4O	61	4	0	0
18	BIOW4C	65	4	0	0
19	TOPO	69	4	0	0
20	CROP	73	4	0	0
21	ANCIL	77	4	0	0
22	SSC	81	1	0	0
23	LUP	85	4	0	0

Format 20 – FLOCON Internal Storage Description

Length = 25
No. of Field = 23

ID	NAME	ST	LEN	TYP	KEY
1	SEG	9	4	0	0
2	LPI	13	1	0	0
3	DATACQ	14	4	0	0
4	BW	18	1	0	1
5	FF	19	1	0	0
6	CURS	20	1	0	1
7	CURCOM	21	20	0	0
8	TAPE	41	6	0	0
9	GSFC	47	4	0	0
10	CANI	51	4	0	0
11	LPDLCO	55	4	0	0
12	AICOMP	59	4	0	0
13	PACKRE	63	4	0	0
14	RUNSUB	67	4	0	0
15	RUNCT	74	1	0	0
16	PRODRE	75	4	0	0
17	REWORK	79	4	0	0
18	RWKCT	86	1	0	0
19	TOCAS	87	4	0	0
20	CAMSBP	91	3	0	0
21	CATG	94	2	0	1
22	LSD	96	4	0	0
23	CURRCM	28	14	0	0

Format 21 – "*" Card Description

Length = 22
No. of Field = 7

ID	NAME	ST	LEN	TYP	KEY
4	COUNTR	9	6	4	0
5	REG	28	2	0	0
6	ZONE	31	4	4	0
7	STR	36	4	4	0
8	GD	41	1	4	0
9	PC	43	2	4	0
10	LUP	47	4	0	0

Format 22 – "2" Card Description

Length = 22
No. of Field = 3

ID	NAME	ST	LEN	TYP	KEY
4	TY	9	1	4	0
5	WV	11	1	4	0
6	FF	29	1	4	0

Format 23 – "3" Card Description

Length = 22
No. of Field = 8

ID	NAME	ST	LEN	TYP	KEY
4	BIOW1O	10	4	4	0
5	BIOW1C	16	4	4	0
6	BIOW2O	22	4	4	0
7	BIOW2C	28	4	4	0
8	BIOW3O	34	4	4	0
9	BIOW3C	40	4	4	0
10	BIOW4C	52	4	4	0

Format 24 – "4" Card Description

Length = 22
No. of Field = 3

ID	NAME	ST	LEN	TYP	KEY
4	TOPO	14	4	0	0
9	SSC	2	1	3	0
10	LUP	14	4	0	0

Format 25 – "5" Card Description

Length = 22
No. of Field = 3

ID	NAME	ST	LEN	TYP	KEY
4	CROP	14	4	0	0
9	SSC	2	1	3	0
10	LUP	14	4	0	0

Format 26 – "6" Card Description

Length = 22
No. of Field = 3

ID	NAME	ST	LEN	TYP	KEY
4	ANCIL	14	4	0	0
9	SSC	2	1	3	0
10	LUP	14	4	0	0

Format 27 – "B" Card Description

Length = 25
No. of Field = 11

ID	NAME	ST	LEN	TYP	KEY
1	SEG	4	4	0	0
2	LPI	8	1	0	0
4	DATACQ	9	4	0	0
5	LSD	14	4	0	0
6	TAPE	19	6	4	0
7	GSFC	26	4	4	0
8	CANI	31	4	4	0
9	FF	36	1	4	0
10	CURS	2	1	0	0
11	CURCOM	0	0	9	0
12	BW	0	0	8	1

Format 28 – "G" Card Description

Length = 25
No. of Field = 4

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	LPDLCO	14	4	0	0
7	CURS	2	1	0	0
8	CURCOM	0	0	9	0

Format 29 – "H" Card Description

Length = 25
No. of Field = 5

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	AICOMP	14	4	0	0
7	LPDLCO	0	0	7	0
8	CURS	2	1	0	0
9	CURCOM	0	0	9	0

Format 30 – "I" Card Description

Length = 25
No. of Field = 5

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	PACKRE	14	4	0	0
7	AICOMP	0	0	7	0
8	CURS	2	1	0	0
9	CURCOM	0	0	9	0

Format 31 – "J" Card Description

Length = 25
No. of Field = 6

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	RUNSUB	14	4	0	0
7	PACKRE	0	0	7	0
8	CURS	2	1	0	0
9	CURCOM	0	0	9	0
10	RUNCT	0	0	6	0

Format 32 — "K" Card Description

Length = 25
No. of Field = 5

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	PRODRE	14	4	0	0
7	CURS	2	1	0	0
8	CURCOM	0	0	9	0
9	RUNSUB	0	0	7	0

Format 33 — "M" Card Description

Length = 25
No. of Field = 6

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	REWORK	14	4	0	0
7	CURS	2	1	0	0
8	CURCOM	0	0	9	0
9	RWKCT	0	0	6	0
10	RUNSUB	0	0	7	0

Format 34 — "X" Card Description

Length = 25
No. of Field = 7

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	CATG	19	2	4	0
7	CAMSBP	22	3	4	0
8	TOCAS	14	4	0	0
9	PACKRE	0	0	7	0
10	CURS	2	1	0	0
11	CURCOM	0	0	9	0

Format 35 – "U" Card Description

Length = 25
No. of Field = 3

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	CURCOM	0	0	9	0
7	TOCAS	0	0	7	0

Format 36 – "7" Card Description

Length = 25
No. of Field = 4

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	CURCOM	0	0	9	0
7	CURS	2	1	0	0
8	CURRCM	24	18	0	0

Format 37 – "8" Card Description

Length = 25
No. of Field = 4

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	CURCOM	0	0	9	0
7	CURRCM	24	18	0	0
8	CURS	2	1	0	0

Format 38 – "9" Card Description

Length = 25
No. of Field = 4

ID	NAME	ST	LEN	TYP	KEY
5	LSD	14	4	0	0
6	CURCOM	0	0	9	0
7	CURS	2	1	0	0
8	CURRCM	24	18	0	0

Format 49 – COMSHARE-DAPTS Tape Load

Length = 22
No. of Field = 23

ID	NAME	ST	LEN	TYP	KEY
1	SEG	1	4	0	0
2	LPI	5	1	0	0
3	COUNTR	6	6	0	0
4	REG	12	4	0	0
5	ZONE	16	4	0	0
6	STR	20	4	0	0
7	GD	24	1	0	0
8	WV	25	1	0	0
9	PC	26	2	0	0
10	TY	28	1	0	0
11	BIOW1O	29	4	0	0
12	BIOW1C	33	4	0	0
13	BIOW2O	37	4	0	0
14	BIOW2C	41	4	0	0
15	BIOW3O	45	4	0	0
16	BIOW3C	49	4	0	0
17	BIOW4O	53	4	0	0
18	BIOW4C	57	4	0	0
19	TOPO	61	4	0	0

20	CROP	65	4	0	0
21	ANCIL	69	4	0	0
22	SSC	73	1	0	0
23	LUP	74	4	0	0

Format 50 – COMSHARE-FLOCON Tape Load

Length = 25
No. of Field = 22

ID	NAME	ST	LEN	TYP	KEY
1	SEG	1	4	0	0
2	LPI	5	1	0	0
3	DATACQ	6	4	0	0
4	BW	10	1	0	0
5	FF	11	1	0	0
6	CURS	12	1	0	0
7	CURCOM	13	20	0	0
8	TAPE	33	6	0	0
9	GSFC	39	4	0	0
10	CANI	43	4	0	0
11	LPDLCO	47	4	0	0
12	AICOMP	51	4	0	0
13	PACKRE	55	4	0	0
14	RUNSUB	59	4	0	0
15	RUNCT	63	4	0	0
16	PRODRE	67	4	0	0
17	REWORK	71	4	0	0
18	RWKCT	75	4	0	0
19	TOCAS	79	4	0	0
20	CAMSBP	83	3	0	0
21	CATG	86	2	0	0
22	LSD	88	4	0	0

Format 52 – Load *2, 3 Cards (New DAPTS Records) or Updates

Length = 22
No. of Field = 20

ID	NAME	ST	LEN	TYP	KEY
1	CTYPE	2	1	0	0
2	REG	4	4	0	0
3	LPI	8	1	0	0
4	COUNTR	9	6	4	0
5	REG	28	2	0	0
6	ZONE	31	4	4	0
7	STR	36	4	4	0
8	GD	41	1	4	0
9	PC	43	2	4	0
11	TY	89	1	4	0
12	WV	91	1	4	0
15	BIOW1O	170	4	4	0
16	BIOW1C	176	4	4	0
17	BIOW2O	182	4	4	0
18	BIOW2C	188	4	4	0
19	BIOW3O	194	4	4	0
20	BIOW3C	200	4	4	0
21	BIOW4O	206	4	4	0
22	BIOW4C	212	4	4	0
23	LUP	217	4	0	0

Format 53 – Provides for Output of Biowindow Calculations

Length = 25
No. of Field = 1

ID	NAME	ST	LEN	TYP	KEY
1	BW	0	0	8	0

Format 69 — OPS Status Summary of Segments (Output Report Format)

Length = 30
No. of Field = 21

ID	NAME	ST	LEN	TYP	KEY
1	SEG	9	4	0	0
2	COUNTR	14	6	0	0
3	REG	21	2	0	0
4	ZONE	24	4	0	0
5	STR	29	4	0	0
6	GD	34	1	0	0
7	WV	36	1	0	0
8	PC	38	2	0	0
9	TY	42	1	0	0
10	BIOW1O	44	4	0	0
11	BIOW1C	50	4	0	0
12	BIOW2O	55	4	0	0
13	BIOW2C	61	4	0	0
14	BIOW3O	66	4	0	0
15	BIOW3C	72	4	0	0
16	BIOW4O	77	4	0	0
17	BIOW4C	83	4	0	0
18	TOPO	88	4	0	0
19	CROP	93	4	0	0
20	ANCIL	98	4	0	0
21	LUP	105	4	0	0

NOTE: The above report format was generated as a user request over and above the requirements specifications (LEC-8675, Rev. A) and is used in conjunction with the OP 13 command file.

Format 70 – OPS Status Summary of Acquisitions (Output Report Format)

Length = 30
No. of Field = 24

ID	NAME	ST	LEN	TYP	KEY
1	SEG	9	4	0	0
2	DATACQ	14	4	0	0
3	BW	19	1	0	0
4	WV	21	1	0	0
5	TAPE	23	6	0	0
6	FF	30	1	0	0
7	REG	32	2	0	0
8	PC	35	2	0	0
9	GSFC	38	4	0	0
10	CURCOM	43	20	0	0
11	CANI	63	4	0	0
12	LPDLCO	69	4	0	0
13	AICOMP	74	4	0	0
14	PACKRE	79	4	0	0
15	RUNSUB	84	4	0	0
16	RUNCT	89	1	0	0
17	PRODRE	91	4	0	0
18	REWORK	96	4	0	0
19	RWKCT	101	1	0	0
20	TOCAS	103	4	0	0
21	CAMSBP	108	3	0	0
22	CATG	112	2	0	0
23	LSD	115	4	0	0
24	SSC	43	20	9	0

NOTE: The above report format was generated as a user request over and above the requirement specifications (LEC-8675, Rev. A) and is used in conjunction with the OP23 Command file.

Format 90 – Packet Order List (Output Report Format)

Length = 25
No. of Field = 9

ID	NAME	ST	LEN	TYP	KEY
1	SEG	13	4	0	0
2	LPI	20	1	0	0
3	DATACQ	23	4	0	0
4	REG	29	4	0	0
5	ZONE	34	4	0	0
6	STR	40	4	0	0
7	BW	46	1	0	0
8	WV	49	1	0	0
9	LSD	59	4	0	0

NOTE: The above report format is also used to generate a listing wherein the DATACQ is replaced by a count of acquisitions/segment as a user request over and above the requirement specifications (LEC-8675, Rev. A) and is used in running the Packet Order List Count (POLCNT) program as a post-processor.

APPENDIX B

VALID RIMS COMMANDS

MNEMONIC	COMMAND
AF	Add file
AK	Add key name
AR	Add record
BE	Begin
CF	Change field
CM	Compute (Mean, Standard Deviation)
CO	Combine (sets)
DD	Define format
DE	Delete (Status Table Entry)
DF	Display formatted
DI	Display (records)
DK	Delete key name
DR	Delete records
DS	Delete set(s)
EN	End
EX	Expand (key name)
FO	Format display
GC	Get children (records)
GP	Get Parent (records)
HD	Header
JF	Joint display formatted
KY	New key
MO	Move set count to record
NK	No key
PA	Page (key name list)
PF	Print formatted

MNEMONIC	COMMAND
PO	Post
PR	Print (records)
RE	Restructure
RF	Reassign file
RK	Replace key name
RR	Replace record
S+	Add security
S-	Delete security
SC	Set count
SF	Spool formatted
SK	Select key
SN	Select non-key
SO	Sort (order)
SR	Specify record
SS	Specify sets
ST	Status
SU	Select Universe
UF	Update file
UP	Unpost
VP	Verify post
XR	Cross-reference
ZZ	Zero (null) sets

APPENDIX C
INTERACTIVE TERMINAL LOG ON/OFF PROCEDURES

Log On/Off Procedures

The interactive terminal is hard-wired to the PDP 11/45; however, the user should query the operator to verify that the terminal is "slaved". For clarity, all system prompts and responses are underlined; whereas, user typed commands are not underlined.

First type a "CONTROL" C which will result in the prompt: MCR> to which the user responds by logging onto the system as follows:

MCR>HEL [UIC]
MCR>RUN RIMS (and depress the "ALT" key instead of the carriage return key) or
MCR> (depress the "CONTROL" and Z keys simultaneously)
ENTER COMMAND (the user has now entered RIMS)
DEXX (the XX represents the data base name)
PASSWORD>(enter code word assigned by the DBA in accordance with access control procedures)

To complete a session using the system, the commands are:

ENTER COMMAND
EN
RIMS - - - - STOP
MCR>BYE

To properly complete the terminal session, the user should inform the operator of his termination. The operator can then "unslave" the terminal.

APPENDIX D

INTERACTIVE TERMINAL RETRIEVAL/UPDATE SESSION EXAMPLE

INTERACTIVE DATA RETRIEVAL

A complete list of RIMS commands and the general command syntax is contained in Appendix B for convenience. Details of these commands are contained in the RIMS User's Document, LEC-9301 (Rev. A).

Some of the more commonly used commands are illustrated in the example which follows. These commands are:

- EX - Expand (keys)
- SK - Select key
- SN - Select non-key
- CO - Combine (sets)
- DI - Display set (data base format)
- ST - Status (of selected sets)

It is assumed that the user has some basic knowledge of set theory and the use of Boolean Logic. Boolean logic symbols as used herein are:

Symbol	Logic
*	and
+	inclusive or
x	exclusive or
-	not

Expand (EX) Command

The expand command is used to access the inverted file pointers for the posted key fields as follows:

ENTER COMMAND

EXCOUNTRUS

1	CATG	34	2
2	CATG	36	3Ø3
3	CATG	38	15
4	CATG	4Ø	7
5	COUNTRCCCCC		85
6	COUNTRIIIII		133
7	COUNTRUS		546
8	COUNTRUUUUU		1157
9	CURS	7	11
1Ø	CURS	9	1
11	CURS	B	332
12	CURS	G	477
13	CURS	H	1499
14	CURS	I	61Ø
15	CURS	J	2Ø

The display shows that "COUNTRUS" is represented in set 7 and that 546 logical records are represented. It is assumed, also, that the user knows that country is a DAPTS (parent) type field.

The desired set must be carefully chosen.

Select Key (SK) Command

The SK command is used to designate (select) a set from the keyed field list shown by the EX command and to place the set into the RIMS Session Status Table; e.g.,

ENTER COMMAND
SK7

1	COUNTRUS	546

Note that the set number is the selected set number of the Status Table and not the number shown in the EX command. This simply means that the set pointers have now been isolated for this particular retrieval.

Suppose that it is desirable to obtain a set of records for another key field such that the priority code is equal to one, returning to the EX command,

ENTER COMMAND
EXPC 1

1	DATACQ7Ø29		28
2	DATACQ7Ø3Ø		2Ø
3	DATACQ7Ø31		54
4	DATACQ7Ø32		18
5	DATACQ7Ø34		13
6	DATACQ7Ø35		3
7	PC	1	25
8	PC	2	4Ø
9	PC	3	191
10	PC	4	132
11	PC	5	433
12	PC	6	81

13	PC	8	133
14	PC	15	85
15	PC	2Ø	591

Set 7 represents 25 logical records containing a priority code (PC) = 1. It may be desirable to also select this set; e.g.,

ENTER COMMAND
SK7

2	PC	1	25

The "STATUS" set 2 contains the pointers for the 25 logical records wherein PC=1.

Combine (CO) Command

The CO command is used to combine selected sets through the use of the Boolean Operators previously discussed. Following through with the example, suppose that it is desirable to limit the 2 selected sets in order to retrieve a set of records which contain both COUNTR=US and PC=1. The command and result are:

ENTER COMMAND
CO1*2

3	CO1*2	24

This indicates creation of a new set (3) consisting of 24 logical records which contain both parameters. It also indicates that 24 of the 25 priority codes 1's are all located in the U.S.; one PC = 1 is located in another country. It may now be desirable to display the records.

Display (DI) Command

The DI command displays all records meeting the parameter(s) of the retrieval (in its internal format) for examination. If other display formats are desired, reference should be made to Appendix A for "canned" report formats or refer to the RIMS User Guide, LEC-9301 (Rev. A) for commands to create a temporary format. Following along with the example:

ENTER COMMAND
DI3

191687 US 004600500059GS1 252746161616261866206618762076273614761476147

191965 US 0038000100013GS1 252746171617261966221619762226273527560986

191966 US 003800010105GS1 252746171617261966221619762226273527560986

191971 US 003000020041GS1 252746166616761986219619962206273527560986

191973 US 005300090075UW1 252746146614761766206617762076273527560986

191974 US 005300090075UW1 252746146614761766206617762076273527560986

etc.

Up to this point, the records retrieved have dealt with the DAPTS (or parent) records without reference to the FLOCON (children) records. The user should refer to the RIMS User's Guide for the Get Children (GC), Get Parent (GP), and Joint Format (JF) Display Commands. Since these commands automatically result in the generation of additional sets and are fully explained in the RIMS User's document, use of these commands will not be illustrated here.

Set Status (ST) Command

The ST command may be used to review which sets have been selected, combined, etc. during the retrieval (or interactive update) session; e.g.,

ENTER COMMAND
ST

1	COUNTRUS	546
2	PC 1	25
3	CO1*2	24

Select Non-Key (SN) Command

The SN command may be used to enter retrieval parameters which are related to non-keyed data fields; i.e., to retrieve all records from set 1 (COUNTRUS=546 records) in which the LPDLCO is within the year 1975.

ENTER COMMAND
SN1, LPDLCO.GE.5001, LPDLCO.LE.5365

4	SN1 LPDLCO.GE.5001,LPDLC	16

The display above shows that 16 logical records contained in the country=US set also met the select non-key parameters. NOTE: The comma between "5001" and the next "LPDLCO" implies Boolean "and" logic which is the only parameter combinational Boolean operator extended for use within this command. It should also be noted that the LPDLCO field is contained in a FLOCON (children) type record. This set can now be displayed, combined with other sets, the Get Parent (GP) command issued, etc.

DATA BASE UPDATING BY INTERACTIVE TERMINAL

The DBA may find it necessary to enter a specific data value into one or more of the fields of a set of data base records. Since the command to change data contents in data fields operates upon a selected set, it is assumed that the DBA has retrieved an appropriate (parent or child) set of records. The data change effects all records in the set, so care must be taken to ensure the set contains only the records requiring the change. To illustrate an interactive update, assume the DBA has selected 5 FLOCON (children) records requiring a change in both the CANI and LPDLCO fields; the ST command shows:

7 CO3*4 5

To update the 2 data fields in all 5 records:

ENTER COMMAND
CF7, CANI=6215,LPDLCO=6217

The next ENTER COMMAND display is the only indication that the change has been accomplished. Had either, or both of the named data fields been a key field, then the permanent sets (key field pointers) associated with the key fields would also have been updated.